What can I do with a degree in
Data Science?

UC UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Data Science.

Career planning: what do I need to know?

Knowledge of yourself is important for career decision making. Start by looking at your personal goals, abilities, values and interests to explore study and career options that are relevant to you. Some of these may change over time, so it is important to self-reflect and evaluate your career on an ongoing basis.

What do employers look for?

Many employers look for generic skills such as communication, customer-focus, bicultural competence, cultural awareness and teamwork. With technology and globalisation changing the nature of society, skills such as resilience, problem solving and adaptability are valuable at work as well as in life.

How can I develop these skills?

- Some skills are developed through your degree
- Extra-curricular activities can help, for example getting involved in clubs, mentoring, cultural groups, part-time work, or volunteering
- Be open to professional and personal development opportunities. Whether it is undertaking an internship, overseas exchange, skills seminar, or joining an industry group — these activities will enhance your employability.

What else should I know?

The career options in this brochure are examples only, and the list is not exhaustive. Some careers may require further study beyond a first degree or additional work experience. Some pathways and degrees have a recommended school background. Find more subject details at
💻 www.canterbury.ac.nz/subjects/data-science

If this brochure does not answer your questions, talking to an expert such as a career consultant can help you to identify the next steps in your career decision making journey.
💻 www.canterbury.ac.nz/careers

What is Data Science?

We live in a world where the data that we generate is growing exponentially and increasing in complexity day by day. The storage, maintenance, and analysis of data is important for organisations who are accumulating data faster than they can process effectively. New sources of data such as web logs, mobile devices, and embedded sensors require new techniques to make sense of this deluge of "big data", and graduates with the skills to develop and use these technologies.

Data science is a profession that draws from mathematics, statistics, and computer science to turn data into meaningful insights. Graduates are at the forefront of technical innovation by developing and implementing new techniques for data analysis and decision making.

Students study topics such as algorithms, statistical modelling and scalable computing, and topical issues such as data ethics and security.

AT A GLANCE

$105k–$133k is what data scientists can expect to earn*

97% of Data Science graduates are working in employment directly relating to their field of study**

76% of data scientists identify as male and the industry would like to achieve better gender diversity^

* *www.careers.govt.nz*
** *2017, 2018, 2019 Graduate Destination Surveys combined*
^ *Talent International, "Data Science and Analytics Market Snapshot 2020"*

What skills have UC graduates gained?

Aotearoa New Zealand and other countries are currently experiencing a skills shortage in this area. Data Science graduates develop a valuable set of skills that include:

- Problem solving
- Critical thinking
- Numerical confidence
- Advanced analytical capability
- Communication
- Group work
- Algorithm design and programming
- Database software
- An understanding of techniques and theories from mathematics, statistics, computer science, and business intelligence.

Where have UC graduates been employed?

Data Science graduates are employed in a range of organisations. Many go on to work in:

- Technology companies
- Consulting and research firms
- Manufacturing and retail sectors
- Professional services
- Healthcare
- Not-for-profit sector
- Finance and insurance
- Science organisations

A variety of organisations in Aotearoa have hired university graduates for data science roles. For example:

- Public sector bodies such as: the Ministry of Health, the Ministry of Defence, and the New Zealand Police; and
- Private organisations such as: Fonterra Co-operative Group, Heartland Bank, Tenzing Management and Technology Consultants, Spark NZ, FAST NZ, Sysware, Harmonic Analytics, and SLI Systems.

Many employment opportunities exist with organisations that run large computer-based systems, such as finance companies, airline industries, government departments, state-owned enterprises, consulting companies, and computer organisations themselves. Work with these organisations often involves international travel opportunities. Many of our students start up their own software companies, and end up being employers rather than employees.

What jobs and activities do graduates do?

Data science is a fast-growing employment sector. Job titles could include some of the below.

Note: Some of the jobs listed may require postgraduate study. See the 'Further study' section.

Examples:

Data scientist

- Analyses past and current data
- Makes predictions and provides insight
- Acts as a bridge between IT experts and business analysts

Data analyst

- Analyses data and modelling to solve problems
- Gains insight across differing domains and functions

Intelligence advisor

- Ensures a high level of data quality
- Understands industry datasets and processes
- Conducts analysis, monitoring and reporting
- Responds to incidents and resolves problems

Insights analyst

- Deploys surveys and analyses data to help understand patterns and opportunities
- Prepares reports, presentations, new ideas and communicates to stakeholders or clients
- Develops tools, processes and training

Analytics officer

- Oversees analytical operations
- Communicates insights to decision makers

Database coordinator / administrator

- Designs and builds an organisation's data infrastructure
- Maintains the database
- Provides analytical support to others

Data engineer, big data developer

- Uses coding frameworks and software packages to analyse large datasets
- Extracts and transforms big data efficiently
- Solves complex data engineering problems

Technical / project analyst

- Utilises data and analytical models for technical or project purposes
- Provides insight to help make technical or project decisions
- Liaises with different project personnel

Business analyst

- Utilises data and analytical models for organisational information purposes
- Provides insight to assist with strategic and operational decisions
- Liaises with different business functions

Entrepreneur & self-employment

Entrepreneurship and innovation are an increasing part of the working landscape. Through generating a business idea, or getting involved in a start-up/business venture, you have the potential to create a work opportunity that aligns with your knowledge, skills, values and risk profile. To get started on how to establish, run and grow a new business, go to Te Pokapū Rakahinonga, Centre for Entrepreneurship at the University of Canterbury
💻 www.canterbury.ac.nz/uce

What professional organisations can I engage with?

Connecting with professional bodies and organisations can help you to establish professional networks and learn more about different career options in your area of interest. Gaining valuable insight into a profession can assist in making informed career decisions.

- The NZ Data Science + Analytics Forum
  💻 www.analytics.org.nz
- The New Zealand Statistical Association
  💻 www.stats.org.nz
- NZ Tech
  💻 www.nztech.org.nz
- Transforming Data with Intelligence
  💻 https://tdwi.org/
- Institute of Analytics Professionals of Australia
  💻 www.iapa.org.au
- Data Science Association
  💻 www.datascienceassn.org

Having a professional presence on social media networks such as Linkedin and Facebook can help you to keep up to date with important industry developments and trends, networking opportunities, events and job vacancies. Following relevant professional bodies, organisations, companies and thought leaders is a great way to gain a deeper awareness of the industries that interest you. Social media presents an opportunity to build and enhance networks as well as to display your involvement in projects and any academic successes.

Why do further study and what are my options?

Postgraduate study can facilitate career benefits such as specialist skills, entry into a specific occupation, higher starting salary, faster progression rate, and advanced research capability. It is important to determine which, if any, further study will help you in your future career.

UC offers a number of postgraduate programmes in Data Science and Applied Data Science.
💻 www.canterbury.ac.nz/courses

Useful links

Te Rōpū Rapuara UC Careers
💻 www.canterbury.ac.nz/careers

Careers New Zealand
💻 www.careers.govt.nz

James

Bachelor of Science with Honours in Mathematics
PhD in Applied Mathematics, Yale University
Founder / Data Scientist / Software Engineer, Isogonal Limited
Lecturer, University of Canterbury

How did you get into data science?

I started with a degree in Mathematics, picked up Statistics along the way and developed my programming during graduate study. I applied my theoretical knowledge while working on my PhD and working as a software engineer at ESPN.

How has your education helped?

A solid grasp of the theory behind the statistical modelling and machine learning algorithms that are at the core of data science has prepared me to adapt easily to the constantly evolving industry. After finishing my PhD, I founded my own software engineering and data science consulting company to apply this theory to real-world problems.

What's it like having your own consultancy?

I'm responsible for determining how to solve problems in a client's domain. Most of my consulting can be done remotely, so I'm frequently designing data processing pipelines or writing machine learning algorithms with my two year old climbing up the furniture behind me!

I am also designing and teaching a new course on data science computing at UC, along with developing industry partnerships for our master's students to work with real-world datasets. My experience allows me to help students who want to be part of the 'big data revolution'.

Most interesting part of your job?

That the same principles of mathematics and statistics can be applied to a wide range of problems. For example, in my first year of consultancy I worked on projects in online advertising, sociology, sports analysis, marketing, and media broadcasting.

Has there been a standout experience in your career so far?

I implemented a fraud detection algorithm which saved $1.2 million in lost revenue per year for my first client. This was very satisfying and the start of a mutually beneficial partnership.

Do you have any tips for those interested in data science?

Teach yourself programming by solving small problems using Python or R. Even high school students can get started through problem solving or taking up programming as a hobby.

Read more online

Read more stories about our students' university experiences online. UC alumni make a difference in varied ways around the globe. To find out where graduates are now visit 💻 www.canterbury.ac.nz/getstarted/whyuc/student-profiles

The information in this brochure was correct at the time of print but is subject to change.

More information

UC students seeking study advice.

Te Rāngai Pūtaiao | College of Science

The School is made up of specialists in Data Science, Financial Engineering, Mathematics, and Statistics. Courses within the School are able to be studied alongside other subjects and staff invite students to come and discuss their study programme and goals.

T: +64 3 369 5200
E: sciencepgadvice@canterbury.ac.nz

Anyone seeking careers advice.

Te Rōpū Rapuara | UC Careers

UC offers intending and current students and recent graduates a wide range of services, including individual career guidance, seminars, career resources and student and graduate employment opportunities.

T: +64 3 369 0303
E: careers@canterbury.ac.nz

💻 www.canterbury.ac.nz/careers

Prospective students seeking study advice.

Te Rōpū Takawaenga | Student Liaison

The liaison team provide advice to future students who are starting their degree for the first time. They can assist with information on degrees, scholarships, accommodation, and other aspects of university life. We have offices in Christchurch, Auckland and Wellington.

Ōtautahi | Christchurch
T: 0800 VARSITY (0800 827 748)
E: liaison@canterbury.ac.nz

Tāmaki Makaurau | Auckland
T: 0800 UCAUCK
E: auckland@canterbury.ac.nz

Te Whanganui-a-Tara | Wellington
T: 0800 VARSITY (0800 827 748)
E: wellington@canterbury.ac.nz

💻 www.canterbury.ac.nz/liaison

UC UNIVERSITY OF CANTERBURY | Te Rāngai Pūkaha Engineering

4th Edition